

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF OHIO  
EASTERN DIVISION

JOHN DONOHOE, et al.

Plaintiffs,

-V-

CITY OF CLEVELAND, OHIO

Defendant.

CASE NO.: 1:20-cv-00050

JUDGE DAN AARON POLSTER

# Adverse Impact Analysis of 2017 Selection Process for Promotion to Fire Captain

Submitted by:

~~Kyle E. Brink, Ph.D.~~

November 18, 2020

**Table of Contents**

I.	Introduction .....	3
A.	Assignment.....	3
B.	Summary of Findings & Conclusions .....	4
II.	Qualifications.....	4
III.	Description of Captain Promotion Selection Process .....	6
IV.	Adverse Impact .....	7
A.	General Methodological Approach .....	7
B.	Four-Fifths Rule Results .....	9
C.	Practical Test Results .....	12
D.	Tests of Statistical Significance .....	13
E.	Statistical Significance Tests for Determining Adverse Impact .....	15
F.	Adverse Impact Conclusions.....	17
V.	Analysis of Practices Contributing to Adverse Impact.....	17
A.	Rank Order Differences by Race .....	18
B.	Mean Differences by Race .....	19
C.	Conclusions Regarding Practices Contributing to Adverse Impact.....	21
VI.	References.....	22

**List of Tables**

Table 1: Disputed Candidate Races .....	10
Table 2: Selection Rates.....	11
Table 3: Impact Ratios .....	12
Table 4: <i>N-of-1</i> Rule Results.....	12
Table 5: Statistical Significance Test Decision Outcomes .....	13
Table 6: Statistical Significance Test Results .....	16
Table 7: Mann-Whitney Test Results .....	19
Table 8: Mean Race Differences.....	20
Table 9: Guidelines for Interpreting the <i>d</i> -Statistic .....	21

**List of Appendices**

Appendix A: Kyle E. Brink, Ph.D. Curriculum Vitae

## I. Introduction

### A. *Assignment*

1. This report has been prepared at the request of the Plaintiffs who have filed a complaint against the City of Cleveland, Ohio (“City”). The complaint, in part, alleges race-based disparate impact discrimination against White candidates related to the 2017 Captain promotional examination process for the Cleveland Fire Department.<sup>1</sup>
2. Based on my knowledge and experience related to disparate impact, it is my understanding that these complaints proceed as follows:

Phase 1) The plaintiff has the burden of showing adverse impact (i.e., a substantially different rate of selection which works to the disadvantage of members of a protected class).<sup>2</sup>

Phase 2) The defendant has the burden of showing that the procedure having adverse impact is job-related (or valid) for the position in question and consistent with business necessity.<sup>3</sup>

Phase 3) If the defendant meets its burden as set forth in phase 2 above, the plaintiff can still prevail by showing that an alternative measure (or employment practice) with substantially equal validity but lesser adverse impact was available.

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<sup>1</sup> “White” and “Caucasian” are interchangeable terms, and both are used throughout various case-related documents. Likewise, “Black” and “African American” are interchangeable terms, and both are used throughout various case-related documents.

<sup>2</sup> I use “disparate impact” to refer to the three phases as a whole. I use “adverse impact” to refer to the first phase (i.e., the analyses and results pertaining to group differences in selection outcomes).

<sup>3</sup> “Valid” is the technical term for job-relatedness that is used by industrial-organizational psychologists and human resource management professionals. Job-relatedness is demonstrated through validity (or validation) studies. See the *1978 Uniform Guidelines on Employee Selection Procedures* (Equal Employment Opportunity Commission, The Civil Service Commission, The Department of Labor, and The Department of Justice, 1978); the *Uniform Employee Selection Guidelines Interpretation and Clarification (Questions and Answers)* (Equal Employment Opportunity Commission, Office of Personnel Management, Department of Justice, Department of Labor, & Department of Treasury, 1979); the *Principles for the Validation and Use of Personnel Selection Procedures* (Society for Industrial Organizational Psychology, 2018); the *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, National Council on Measurement in Education, 2014).

3. I, Dr. Kyle Brink, have been asked by Plaintiffs' counsel to determine whether adverse impact exists related to the 2017 Captain promotion selection process. Hence, this report is limited to "Phase 1" of disparate impact.

***B. Summary of Findings & Conclusions***

4. I found that there is adverse impact against White candidates on the 2017 Captain promotion selection process.
  - a. The impact ratio is less than .80, indicating that there is adverse impact according to the 4/5ths rule. Practical tests corroborate that the 4/5ths rule violation is not due to sample size issues.
  - b. The Pearson chi-square test is statistically significant ( $p < .05$ ).
5. I found that the following practices contribute to adverse impact:
  - a. The oral board exam.
  - b. The weighted composite score, which includes the three factors that form the composite score (i.e., the written exam score, oral board exam score, and component weights).
  - c. The use of rank-ordering.

**II. Qualifications**

6. When forming my conclusions and opinions, I have relied upon my education and experience. I obtained a Bachelor of Science degree from Grand Valley State University with a major in Psychology and minor in Business. I received a Master's of Science degree and a Doctorate of Philosophy degree from the University of Georgia, both majoring in Applied Psychology (a.k.a. Industrial-Organizational Psychology) – this program was ranked among the top 10 in the United States when I attended.

7. I have experience developing, validating, and administering selection procedures in Fortune 100 and government organizations. I worked under a federal consent decree while at the Personnel Board of Jefferson County, Alabama, and I was instrumental in ending the consent decree and what may have been the longest-lasting employment discrimination case in U.S. history.<sup>4</sup> I am currently a managing partner of Centrus Personnel Solutions, LLC, which is a human resources consulting firm specializing in employment selection, particularly for public safety forces.
8. I am currently an Associate Professor in the Management Department of the Seidman College of Business at Grand Valley State University. I have taught university courses in management and human resources (including the areas of staffing, test development, and validation) at the University of Georgia, St. John Fisher College, Western Michigan University, and Grand Valley State University.
9. I have conducted research in the areas of test validation and adverse impact, I have presented this research at both national and international conferences, and I published a chapter on adverse impact. My education, work experience, and research are further detailed in my curriculum vitae (attached as Appendix A).
10. I have previously been admitted as an expert in federal courts in workplace discrimination lawsuits. My litigation experience is listed on pages 3-5 of my curriculum vitae. My professional fees for matters pertaining to litigation are compensated at \$300 per hour.
11. The primary sources I relied upon when forming my conclusions and opinions were:

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<sup>4</sup> *United States of America v. Jefferson County, Alabama, et al.*, Civil Action No. CV-75-S-666-S. The original suit commenced on January 4, 1974, the consent decree was entered on June 8, 1981, and the consent decree was terminated with the Personnel Board (but not the other co-defendants) on November 20, 2008.

- the *1978 Uniform Guidelines on Employee Selection Procedures* (Equal Employment Opportunity Commission, The Civil Service Commission, The Department of Labor, and The Department of Justice, 1978) (“*Uniform Guidelines*”);
- the *Uniform Employee Selection Guidelines Interpretation and Clarification (Questions and Answers)* (Equal Employment Opportunity Commission, Office of Personnel Management, Department of Justice, Department of Labor, & Department of Treasury, 1979) (“*Uniform Guidelines Questions and Answers*”);
- the *Principles for the Validation and Use of Personnel Selection Procedures* (Society for Industrial Organizational Psychology, 2018) (“*SIOP Principles*”);
- the *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, National Council on Measurement in Education, 2014) (“*Testing Standards*”);
- peer-reviewed research cited throughout this report and listed in the “References” section;
- statistics and research methods textbooks cited throughout this report and listed in the “References” section;
- resources provided to me by Plaintiffs’ counsel, including documents that were filed related to this case or obtained via discovery (cited throughout this report).

### **III. Description of Captain Promotion Selection Process**

12. Candidates who submitted an application and met the minimum qualifications were invited to take the exam components. There were two exam components:

- A written examination was administered on June 24, 2017.
- All candidates who attended the written exam were invited to the oral board examination, which was administered on July 24-27, 2017.

13. There were no cut-off scores for either exam component. Scores for the two exam components were converted to z-scores. The component z-scores were then weighted and combined into a “weighted composite score.” The written exam was weighted at 40% and the oral board exam was weighted at 60%. The weighted composite score was converted to a z-score (“weighted composite z-score”) and the weighted composite z-score was then transformed into a “rescaled final score,” which was on a 100-point scale. The rescaled final score set the highest obtained weighted composite z-score (i.e., 1.50152) equal to 100 and set the weighted composite z-score

of approximately -.06 equal to 70, which was the chosen cut-off score (i.e., lowest passing score) for the exam.

14. Candidates who passed the exam then had up to 10 seniority points added to their score to determine their “Final Promotional Examination Score.”<sup>5</sup> Candidates were ranked based on Final Promotional Examination Score and placed on the “Eligible List” in rank-order.
15. There were 89 individuals who applied to take the promotional exam; 73 took the written exam and 66 took both the written exam and oral board exam. There were 52 candidates who were deemed to have passed the exam, and 22 of the candidates were promoted. It is my understanding that the Eligible List is no longer in use, so final adverse impact related to this selection procedure can now be determined.<sup>6</sup>

#### **IV. Adverse Impact**

16. The *Uniform Guidelines Questions and Answers* (see No. 10) define adverse impact as “a substantially different rate of selection in hiring, promotion or other employment decision which works to the disadvantage of members of a race, sex or ethnic group.” I determined whether adverse impact exists for the 2017 promotion selection process.

##### ***A. General Methodological Approach***

17. The correct method for assessing adverse impact for the Captain promotion selection process used by the City of Cleveland Fire Department is a comparison of candidates who were promoted versus those who were not promoted, including all candidates who took the exam.

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<sup>5</sup> All candidates received 10 seniority points. Therefore, seniority had no impact on selection decisions.

<sup>6</sup> Adverse impact is an analysis of selection decisions. Plaintiffs cannot determine adverse impact at the time of test administration or the releasing of the Eligible List because no selection decisions have been made. Likewise, it is premature to determine adverse impact while the Eligible List is in use because selection decisions are still ongoing.

The *Uniform Guidelines* state that adverse impact is to be determined based on the overall or total selection process that is used to make a *hiring or promotion* decision. As stated in the

*Uniform Guidelines Questions and Answers*:

13. Q. Is adverse impact determined on the basis of the overall selection process or for the components in that process?

A. *Adverse impact is determined first for the overall selection process for each job* [italics added]. If the overall selection process has an adverse impact, the adverse impact of the individual selection procedure should be analyzed. For any selection procedures in the process having an adverse impact which the user continues to use in the same manner, the user is expected to have evidence of validity satisfying the Guidelines. Sections 4C and 5D. If there is no adverse impact for the overall selection process, in most circumstances there is no obligation under the Guidelines to investigate adverse impact for the components, or to validate the selection procedures used for that job. Section 4C. But see Question 25.

14. Q. The Guidelines designate the "total selection process" as the initial basis for determining the impact of selection procedures. What is meant by the "total selection process"?

A. *The "total selection process" refers to the combined effect of all selection procedures leading to the final employment decision such as hiring or promoting* [italics added]. For example, appraisal of candidates for administrative assistant positions in an organization might include initial screening based upon an application blank and interview, a written test, a medical examination, a background check, and a supervisor's interview. These in combination are the total selection process. Additionally, where there is more than one route to the particular kind of employment decision, the total selection process encompasses the combined results of all routes. For example, an employer may select some applicants for a particular kind of job through appropriate written and performance tests. Others may be selected through an internal upward mobility program, on the basis of successful performance in a directly related trainee type of position. In such a case, the impact of the total selection process would be the combined effect of both avenues of entry.

18. In accordance with the *Uniform Guidelines*, I analyzed adverse impact with respect to the overall selection process, or final promotion decisions (i.e., promoted vs. not promoted). Indeed, in this case, adverse impact with respect to the promotion selection process can only be determined for the overall selection process; it cannot be determined for individual selection procedures (i.e., exam components). Despite the fact that candidates' final promotion exam scores were comprised of two exam components (i.e., written exam and oral board exam),



these two scores were combined and the adverse impact of each one separately cannot be determined. Selection decisions were made based on the final score, which is an amalgam of the two scores. No selection decisions were based on either of the components or scores separately.

***B. Four-Fifths Rule Results***

19. The *Uniform Guidelines* (Section 4D) recommends the use of the “4/5ths rule” as a means of determining whether adverse impact against a protected group exists:

A selection rate for any race, sex, or ethnic group which is less than four-fifths (4/5) (or eighty percent) of the rate for the group with the highest rate will generally be regarded by the Federal enforcement agencies as evidence of adverse impact, while a greater than four-fifths rate will generally not be regarded by Federal enforcement agencies as evidence of adverse impact.

20. The *Uniform Guidelines Questions and Answers* (see No. 12) outline the four steps for calculating the 4/5ths rule:

- (1) Calculate the rate of selection for each group (divide the number of persons selected from a group by the number of applicants from that group).
- (2) Observe which group has the highest selection rate.
- (3) Calculate the impact ratios, by comparing the selection rate for each group with that of the highest group (divide the selection rate for a group by the selection rate for the highest group).
- (4) Observe whether the selection rate for any group is substantially less (i.e., usually less than [*sic*] 4/5ths or 80%) than the selection rate for the highest group. If it is, adverse impact is indicated in most circumstances. See Section 4D.

21. Adverse impact was determined by comparing the selection (or promotion) rates of White versus Black candidates.<sup>7</sup>

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<sup>7</sup> There were applicants with races other than Black or White. These applicants were excluded from my analyses because adverse impact only compares two groups (i.e., White vs. Black in my analyses). I did not determine adverse impact against other race groups because the other race groups were substantially smaller.

22. The races for some of the candidates are in dispute. The *Stipulations of Fact Regarding Demographic Information Related to the 2017 Fire Captain's Exam* (September 23, 2020) identified 10 candidates for which the parties do not stipulate race. The disputes related to seven of the candidates (who are listed in Table 1) directly impact the data used for adverse impact analyses. Table 1 shows: a) the race for these individuals as coded in the City's data files and b) the race for these individuals according to the Plaintiffs.

Table 1: Disputed Candidate Races

Last Name	First Name	Race According to City	Race According to Plaintiffs
Kelley	Kevin	Not Disclosed	White
Legeza	Paul	Not Disclosed	White
Lugo	Thomas	Hispanic or Latino	White
Pusateri	Philip	Not Disclosed	White
See	John	Hispanic or Latino	White
Vollmer	Jeffrey	Not Disclosed	White
Zimmerer	Jerome	Nat Hawaiian/Oth Pac Islander	White

23. The EEOC states the following regarding the gathering of race for EEO-1 reports:

Self-identification is the preferred method of identifying the race and ethnic information necessary for the EEO-1 report. Employers are required to offer employees the opportunity to use self-identification to complete the EEO-1 report. If an employee declines to self-identify, employment records or observer observation may be used.<sup>8</sup>

An EEO-1 report is not the same as an employment application. However, the purpose of gathering race on the two forms is largely the same, so the EEOC's guidance is useful for applications, especially when applicants are internal employees.

24. Given that race is self-identified, it would seem that if a person's race is in dispute, the person him/herself would be in the best position to resolve the dispute.

<sup>8</sup> Retrieved on November 9, 2020 from: <https://www.eeoc.gov/employers/eeo-1-survey/eeo-1-frequently-asked-questions-and-answers>

See also: <https://www.eeoc.gov/employers/eeo-1-survey/eeo-1-instruction-booklet>;  
<https://www.eeoc.gov/employers/eeo-1-survey/fact-sheet-eeo-1-survey-filers>

25. Regarding “Not Disclosed” race, the disclosing of race is voluntary. If an employee does not disclose race, but his/her race can be ascertained by the employer, it is permissible for the employer to do so. Furthermore, if an employee chooses not to disclose race at the time of application, nothing prohibits the employee from disclosing race subsequent to (or prior to) the time of application.
26. Although it seems the EEOC would give deference to the races as identified by the Plaintiffs, I analyzed adverse impact both ways: using “city race” and “plaintiff race.”
27. The demographic statistics, exam score data of candidates who took both exams, and promotion outcomes were obtained from:
- Exhibit A (List of Exam Applicants) of *The Stipulations of Fact Regarding Demographic Information Related to the 2017 Fire Captain’s Exam* (September 23, 2020).
  - A data file named: “*Spreadsheet in Response to Pltf. Donohoe ROG 5 – Final.*”
28. The selection rates (i.e., promoted/not promoted selection rates on the overall selection process) for Black and White candidates for the city race and plaintiff race analysis approaches are shown in Table 2.

Table 2: Selection Rates

Analysis Approach	Race	Total Candidates	Promoted	Not Promoted	Promotion Rate
City race	Black	14	8	6	57.1%
	White	40	10	30	25.0%
Plaintiff race	Black	14	8	6	57.1%
	White	47	12	35	25.5%

29. The Black candidate groups had the highest selection rates for both analysis approaches. Therefore, the impact ratios are calculated by dividing the selection rates for the White candidates by the selection rates for the Black candidates. The impact ratios are shown in Table 3. Both impact ratios are less than .80. This indicates that, according to the 4/5ths rule, there is

adverse impact against White candidates for the promotion outcomes of the 2017 Captain promotion selection process, regardless of analysis approach.

Table 3: Impact Ratios

Analysis Approach	Impact Ratio	Evidence of Adverse Impact?
City race	.44	Yes
Plaintiff race	.45	Yes

### C. Practical Test Results

30. The 4/5ths rule indicates that adverse impact exists against White candidates for the promotion selection processes. However, the Black candidate sample was relatively small. The *Uniform Guidelines Questions and Answers* offer a methodology, or practical test, to determine if the results can be attributed to small sample sizes. This practical test that is outlined in *Uniform Guidelines Questions and Answers* No. 21 is often referred to as the *N-of-1* (or flip-flop) rule. The *N-of-1* rule calculates adjusted selection rates assuming one more person from the minority group (where minority refers to the group with the smallest selection rate – or *White* candidates in this case) and one less person from the majority group were hired (and, consequently, one less minority and one more majority were not hired). If the resulting selection rates are such that the minority selection rate is now larger than the majority selection rate, selection rate differences may be attributed to small sample sizes. Table 4 presents the results of the *N-of-1* rule. The adjusted White (or “minority”) selection rates remained smaller than the adjusted Black (or “majority”) selection rates. Therefore, the *N-of-1* rule indicates that the 4/5ths rule violations are not due to small samples.

Table 4: *N-of-1* Rule Results

Analysis Approach	Black (“Majority”) Adjusted Selection Rate	White (“Minority”) Adjusted Selection Rate	Is 4/5ths Rule Violation Due to Small Sample?
City race	50.0%	27.5%	No
Plaintiff race	50.0%	27.7%	No

***D. Tests of Statistical Significance<sup>9</sup>***

31. Statistical significance tests of adverse impact estimate the probability of obtaining the observed sample results (e.g., the promotion rate results for a Captain candidate sample) assuming there is no relationship between group membership and outcome in the population. Statistical tests of adverse impact test the following hypothesis (or null hypothesis): there is no relationship between group membership and decision outcome (i.e., race groups do not differ in decision outcome; there is no adverse impact); any observed difference is due to chance, or sampling error. Given this null hypothesis, there are four possible decision outcomes as shown in Table 5.

Table 5: Statistical Significance Test Decision Outcomes

		Truth (unknown)	
		No adverse impact exists	Adverse impact exists
Decision	No adverse impact exists	Correct acceptance	Type II error ( $\beta$ )
	Adverse impact exists	Type I error ( $\alpha$ )	Power (Correct rejection)

**Correct acceptance:** Correctly accepting the null hypothesis. The truth (which is unknown) is that the population does not have adverse impact and it is decided based on the results of the statistical test that there is no adverse impact.

**Type II error:** Incorrectly accepting the null hypothesis. The truth (which is unknown) is that the population does have adverse impact, but it is incorrectly decided based on the results of the statistical test that there is no adverse impact. This is sometimes referred to as beta error (or  $\beta$ ).

**Type I error:** Incorrectly rejecting the null hypothesis. The truth (which is unknown) is that the population does not have adverse impact, but it is incorrectly decided based on the results of the statistical test that there is adverse impact. This is sometimes referred to as alpha error (or  $\alpha$ ).

<sup>9</sup> This section presents the fundamental principles of statistical significance tests. See generally introductory statistics and research methods textbooks such as Hays (1994), Moore and McCabe (1993), and Ray (2000). I adapted the information to the specific context of analyzing adverse impact.

Power: Correctly rejecting the null hypothesis. The truth (which is unknown) is that the population does have adverse impact and it is decided based on the results of the statistical test that there is adverse impact.

32. Statistical significance tests can take into account the potential for Type I error (i.e., the error of concluding that adverse impact exists, when in reality the difference in selection rates is a result of sampling error, or chance). A “statistically significant” result is one in which the probability of incorrectly concluding that adverse impact exists (i.e., a Type I error) is less than a specified level; this specified level is referred to as an alpha level (or  $\alpha$ ). Statistical tests produce a probability value (or  $p$ -value) that estimates the probability of obtaining the sample result assuming there were no differences in the population. If the  $p$ -value resulting from the statistical significance test is less than the specified alpha level, we say the result is statistically significant and would decide, based on the test, that there is adverse impact.
33. For example, if “Researcher A” chooses an alpha level of .01, and the  $p$ -value resulting from the statistical test is less than .01, then there is less than a 1% probability that the difference is due to chance. Researcher A would conclude that the result is statistically significant and that there is adverse impact, and there is less than a 1% probability that she is making a Type I error. Similarly, if “Researcher B” chooses an alpha level of .25, and the  $p$ -value resulting from the statistical test is less than .25, then there is less than a 25% probability that the difference is due to chance. Researcher B would conclude that the result is statistically significant and that there is adverse impact, and there is less than a 25% probability that he is making a Type I error. Although both researchers conclude that the result is statistically significant (and would reject the null hypothesis and conclude that there is adverse impact), Researcher A can be more confident in her decision to reject the null hypothesis because she has chosen a more conservative alpha level. Note that if Researchers A and B analyze the same data, and the  $p$ -

value is equal to .12, Researcher A would conclude that it is not statistically significant (and would accept the null hypothesis and conclude that there is no adverse impact) whereas Researcher B would conclude that it is statistically significant (and would reject the null hypotheses and conclude that there is adverse impact).

***E. Statistical Significance Tests for Determining Adverse Impact***

34. I used the Pearson chi-square test of association to analyze adverse impact (i.e., the association between race and promotion outcome). The Pearson chi-square statistic tests the association between two variables (i.e., group membership and promotion outcome) by comparing the fit between observed frequencies and expected frequencies.
35. Although the chi-square test is more straightforward, I also used the Pooled Two-Sample Z-Score test (a.k.a. the Z-test for the difference between proportions) because it is commonly used in litigation. With the analyses performed in this report (i.e., analysis of 2 X 2 Tables), the Pooled Two-Sample Z-Score (hereafter “ $Z_D$ ”) is mathematically equivalent to the chi-square (Moore & McCabe, 1993);  $Z_D$  is equal to the square root of the chi-square. Therefore, the results of the chi-square and  $Z_D$  statistical tests will necessarily be identical.
36. The conventionally chosen alpha ( $\alpha$ ) level for tests of statistical significance is .05. I adopted an alpha level of .05 in my analyses.<sup>10</sup> The results of the statistical significance tests are summarized in Table 6.

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<sup>10</sup> There is some debate regarding the appropriateness of simply adopting the somewhat arbitrarily chosen alpha level of .05 (e.g., see Hays, 1994), and whether an alpha value is even needed (e.g., see McClave, Benson, & Sincich, 2014). Furthermore, it could be persuasively argued that a larger alpha value may be more appropriate. However, these debates and arguments are not relevant with respect to my analyses because all the results were statistically significant beyond the .05 alpha level.

Table 6: Statistical Significance Test Results

Analysis Approach	Chi-square		Z <sub>D</sub> Test Value	Statistically significant?
	Test value	p-value		
City race	4.82	0.03	2.20	Yes
Plaintiff race	4.89	0.03	2.21	Yes

*Note.* Z<sub>D</sub> does not produce a *p*-value; if  $|Z| > 1.96$ , then it is significant at two-tailed  $\alpha = .05$ .

37. For both analysis approaches, the *p*-values for the chi-square tests are .03, which are below the .05 alpha level and are statistically significant. Likewise, the absolute values of the Z<sub>D</sub> test values for both analysis approaches are greater than 1.96 and are statistically significant. This indicates that, regardless of analysis approach, according to the chi-square (and Z<sub>D</sub>) test, there is adverse impact against White candidates for the promotion outcomes of the 2017 Captain promotion selection process.

38. Note that sample size is not a factor for these statistical significance tests because the results were statistically significant. Although sample size is relevant to tests of statistical significance, it is only one of many factors, and it is not the determining factor. The more important factor is the concept of power, and power is influenced by total sample size, the relative size of the sub-groups being compared, the selection ratio, the effect size (i.e., the size of the impact ratio), and the chosen alpha level, among other factors (Biddle, 2005; Cohen, 1988; Collins & Morris, 2008; Morris & Lobsenz, 2000). The probability of Type II error is equal to 1 – power. A small sample size is problematic when the result of a statistical significance test is not significant because the non-significant result could be due to low power (which may have been caused by a smaller sample size), which could result in a high probability of making a Type II error.

39. However, small samples and a high probability of Type II error are not relevant for results that are statistically significant because Type II error is the probability of incorrectly concluding that adverse impact does not exist. The probability of a Type II error is zero when the result is



statistically significant because the conclusion reached is that adverse impact does exist. You cannot both conclude that adverse impact exists and make the erroneous conclusion that it does not exist (i.e., Type II error). If a statistical test result is statistically significant at a .05 alpha level, the probability of Type II error is zero and the probability of Type I error is very low (less than 5%).

***F. Adverse Impact Conclusions***

40. There is adverse impact against White candidates on the 2017 Captain promotion selection process. Regardless of the data analysis approach (i.e., city race vs plaintiff race):

- a. The impact ratio is less than .80. Practical tests corroborate that the 4/5ths rule violation is not due to sample size issues.
- b. The Pearson chi-square test (and  $Z_D$ ) is statistically significant ( $p < .05$ ).

**V. Analysis of Practices Contributing to Adverse Impact**

41. My analyses have determined that adverse impact is present for the Captain promotional selection process. As stated previously, it is not possible to determine adverse impact, per se, with respect to individual selection procedures. However, it is possible to examine overall race differences with respect to individual selection procedures or practices, and these types of analyses can identify which procedures/practices may be contributing to adverse impact. Therefore, I now conduct additional statistical analyses to determine which practices are contributing to the adverse impact. I examined White vs. Black differences with respect to the following:

- Rank order differences for the written exam, oral board exam, and rescaled final score (which is the weighted composite z-score rescaled to a 100-point scale) to determine if the practice of rank-ordering contributes to adverse impact.

- Mean differences for the written exam and oral board exam component scores to determine if the oral board exam and/or written exam contribute to adverse impact.
- Mean differences for the rescaled final score to determine if the composite scores and weighting of components contribute to adverse impact.

42. There were seven candidates who took the written exam but did not receive scores because they did not take the oral board exam. Written exam scores for these seven candidates were provided to me by Plaintiffs' counsel.<sup>11</sup> I included these scores in analyses of rank order differences and mean differences for the written exam. Six of these candidates are White and the race for one of these candidates is disputed.<sup>12</sup>

***A. Rank Order Differences by Race***

43. Rank order differences between White and Black candidates on the component and weighted composite scores were analyzed using the Mann-Whitney Test. A casual observer may notice that the top four scores on the Eligible List are White candidates and may assume that White candidates are faring well on the exam. However, anecdotal conclusions such as these are prone to error. The Mann-Whitney Test takes into account the entire distribution of scores to determine if one group, overall, is ranked higher than another group.

44. The results of the Mann-Whitney Test are shown in Table 7. There are statistically significant differences (using the traditional alpha level of .05) on the oral board exam scores and the weighted composite scores (i.e., rescaled final scores), regardless of analysis approach. This indicates that Black applicants are clustered among the higher exam scores whereas White

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<sup>11</sup> See PSI-CleveFire-0009710.

<sup>12</sup> The city coded John Shea's race as "Not Disclosed" whereas the Plaintiffs argue he is White.

applicants are clustered among the lower exam scores for the oral board exam and weighted composite scores. Therefore, the use of rank-ordered scores contributes to adverse impact.

Table 7: Mann-Whitney Test Results

Exam Score	<i>p</i> -value
<i>City Race Analysis Approach</i>	
Written exam	.587
Oral board exam	.000
Rescaled final score	.035
<i>Plaintiff Race Analysis Approach</i>	
Written exam	.554
Oral board exam	.000
Rescaled final score	.033

45. The Mann-Whitney Test results for the written exam are not statistically significant.

#### ***B. Mean Differences by Race***

46. Mean differences between White and Black candidate scores were analyzed using independent samples t-tests. The results are shown in Table 8. There are statistically significant differences for the oral board exam scores and the weighted composite scores (i.e., rescaled final scores), regardless of analysis approach. This indicates that, on average, Black applicants scored higher than White applicants. Therefore, the oral board exam and the rescaled final score (which includes the written exam, oral board exam, and the weighted composite of the respective exams) are contributing to adverse impact.

Table 8: Mean Race Differences

Exam Score	White		Black		<i>t</i> -value	<i>p</i> -value	Cohen's <i>d</i>
	<i>Mean</i>	<i>St Dev</i>	<i>Mean</i>	<i>St Dev</i>			
<i>City Race Analysis Approach</i>							
Written exam	60.6	8.13	61.3	9.19	0.26	.799	0.08
Oral board exam	28.6	6.30	33.9	2.69	4.32	.000	1.10
Rescaled final score	76.3	15.28	85.3	10.75	2.04	.046	0.69
<i>Plaintiff Race Analysis Approach</i>							
Written exam	60.4	8.35	61.3	9.19	0.37	.716	0.11
Oral board exam	28.8	6.10	33.9	2.69	4.47	.000	1.08
Rescaled final score	76.6	14.97	85.3	10.75	2.03	.047	0.67

47. The mean differences for the written exam were not statistically significant.

48. Cohen's *d* is an effect size that is used to describe the magnitude of the differences. The *d*-statistic is a standardized index of the magnitude of group differences and is often used to express test score differences between demographic groups. It is an index of practical significance that indicates how meaningful the differences are. In theory, the *d*-statistic can range from negative to positive infinity, where 0.0 reflects no difference between two groups (i.e., the average scores on the selection predictor for the Black group and the White group are equal). Larger absolute values (i.e., positive or negative *d*-values) reflect larger differences between the two groups. Cohen (1988) provides guidelines for interpreting the *d*-statistic. The guidelines are reproduced in Table 9.

Table 9: Guidelines for Interpreting the  $d$ -Statistic

$d$ -statistic value	Interpretation
0.2	Small
0.5	Medium
0.8	Large

49. Cohen (1988) did not label a  $d = 1.0$  or a  $d = 1.10$  (such as the  $d$  related to race differences for the oral board score), but they might be described as extra-large or “XXL,” respectively.
50. Notably, the exam component with the largest group differences (i.e., the oral board exam) received the largest weight when computing the composite scores. Therefore, the oral board exams’ contribution toward adverse impact is exacerbated by the weights’ contribution toward adverse impact.

### ***C. Conclusions Regarding Practices Contributing to Adverse Impact***

51. Several selection procedures or practices were identified that contribute to adverse impact.
52. First, the oral board exam contributes to adverse impact, as evidenced by the statistically significant mean difference between White and Black candidates and the large effect size.
53. Second, the weighted composite score contributes to adverse impact, as evidenced by the statistically significant mean difference between White and Black candidates and the medium-to-large effect size. The weighted composite score is inclusive of the three factors that form the composite score (i.e., the written exam score, oral board exam score, and component weights).
54. Finally, the practice of using rank-ordering, on both the oral board exam and the weighted composite score, contributes to adverse impact as evidenced by the statistically significant results of the Mann-Whitney Test.

## VI. References

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- Biddle, D. A. (2005). *Adverse impact and test validation: A practitioner's guide to valid and defensible employment testing*. Burlington, VT: Gower Publishing, Ltd.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
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Morris, S. B., & Lobsenz, R. E. (2000). Significance tests and confidence intervals for the adverse impact ratio. *Personnel Psychology*, 53(1), 89-111. doi:10.1111/j.1744-6570.2000.tb00195.x

Ray, W. J. (2000). *Methods toward a science of behavior and experience* (6th ed.). Belmont, CA: Wadsworth.

Society for Industrial and Organizational Psychology. (2018). *Principles for the validation and use of personnel selection procedures* (5th ed.). Bowling Green, OH: Society for Industrial and Organizational Psychology, Inc.

## Appendix A:

Kyle E. Brink, Ph.D. Curriculum Vitae



**KYLE E. BRINK, PH.D.**

**Grand Valley State University:**

L. William Seidman Center 3115  
50 Front Ave SW  
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**EDUCATION**

**Doctor of Philosophy** – The University of Georgia, Athens, GA

August 2003

Major: Industrial/Organizational Psychology

Dissertation Title: *New Hire Socialization: The Dynamic Relationships among Individual Differences, Cognition, Affect, and Behavior*

**Master of Science** – The University of Georgia, Athens, GA

August 2000

Major: Industrial/Organizational Psychology

Thesis Title: *Self-Monitoring and Goal Orientation: Moderators in the Variable Effects of Feedback on Self-Efficacy and Self-Set Goals*

➤ Received *The Donald L. Grant Award*, in recognition of the most outstanding Master of Science Thesis in the Applied Psychology Program, The University of Georgia.

**Bachelor of Science** – Grand Valley State University, Allendale, MI

April 1998

Major: Psychology      Minor: Business

**ACADEMIC POSITIONS**

**Grand Valley State University**, Grand Rapids/Allendale, MI

08/19-Present *Associate Professor*. Teach courses in management and human resource management in the Department of Management of the Seidman College of Business (AACSB Accredited).

**Western Michigan University**, Kalamazoo, MI

08/16-08/19 *Associate Professor*. Taught courses in management and human resource management in the Department of Management of the Haworth College of Business (AACSB Accredited). Awarded early tenure and promotion. Led HRM curriculum redesign to introduce an HRM Minor.

01/17-04/18 *Institutional Equity Faculty Fellow*. Responsible for developing campus partnerships and resources for recruiting, retaining and advancing a qualified and diverse Academic Affairs workforce that reflects the diversity in our student body and society. Accomplishments include developing an extensive Faculty Hiring Manual and delivering more than 25 workshops to 550+ employees and search committee members.

08/12-7/16 *Assistant Professor*.

**St. John Fisher College**, Rochester, NY

09/09-08/12 *Assistant Professor*. Tenure track professor in the Department of Management of the Bittner School of Business (AACSB Accredited). Taught courses in the areas of management and human resource management. Initiated and led redesign of HRM concentration curriculum to align with SHRM guidelines making SJFC the first undergraduate HR program in the Rochester region on the “List of University HR Programs that Align with SHRM's Guides.” Initiated founding of student SHRM chapter. Led HRM curriculum redesign to introduce an HRM Major.

**The University of Georgia, Athens, GA**

1999-2001 *Graduate Teaching Assistant.* Instructor, Lab Instructor, and Graduate Assistant for the Department of Psychology. Received the *Outstanding Teaching Assistant Award*.

**College of Education, The University of Georgia, Athens, GA**

1999 *Consultant.* Led focus groups for the College of Education Multi-Cultural Initiative.

**J.W. Fanning Institute for Leadership, The University of Georgia, Athens, GA**

1998 Entered and analyzed data from USDA survey results.

**UNIVERSITY/COLLEGE COURSES TAUGHT**

**Staffing and Development (MGT 429)** – *Instructor*; Grand Valley State University, Seidman College of Business

**Managing People and Organizations (MGT 331)** – *Instructor*; Grand Valley State University, Seidman College of Business

**Staffing Organizations (MGMT 4510)** – *Instructor*; Western Michigan University, Haworth College of Business

**Leadership in Business Organizations (MGMT 4020)** – *Instructor*; Western Michigan University, Haworth College of Business

**Managing Diversity in Organizations (MGMT 3500)** – *Instructor*; Western Michigan University, Haworth College of Business

**Human Resource Management (MGMT 2520 [formerly 3520])** – *Instructor*; Western Michigan University, Haworth College of Business

**Organizational Behavior (MGMT 2500)** – *Instructor*; Western Michigan University, Haworth College of Business

**Staffing Human Resources (HRMG 338)** – *Instructor*; St. John Fisher College, Bittner School of Business

**Managing Team & Organizational Behavior (MGMT 211)** – *Instructor*; St. John Fisher College, Bittner School of Business

**Psychology of the Workplace (PSYC 4230)** – *Lab Instructor*; The University of Georgia, Psychology Department

**Psychology of Testing (PSYC 4210)** – *Instructor, Lab Instructor*; The University of Georgia, Psychology Department

**Research Analysis (PSYC 2990)** – *Lab Instructor*; The University of Georgia, Psychology Department

**Research Design (PSYC 2980)** – *Instructor*; The University of Georgia, Psychology Department

**Elementary Psychology (PSYC 1101)** – *Graduate Assistant*; The University of Georgia, Psychology Department

**PROFESSIONAL/INDUSTRY POSITIONS**

**Centrus Personnel Solutions, LLC, Birmingham, AL**

05/07-Present *Co-Founder, Partner, & Principal Consultant.* Human resource management consulting firm. Prepare proposals for obtaining contracts. Lead and manage consulting projects in the areas of job analysis, competency modeling, employee selection, test development and validation, litigation support, data analysis, organizational surveys, performance management and appraisal, needs assessment and training program development, organizational development and structuring.

**Personnel Board of Jefferson County, Birmingham, AL**

05/03-05/09 *Industrial/Organizational Psychologist.* Managed a team of I/O professionals responsible for conducting validation studies. Supervised over 150 job analyses. Developed cutting edge technology-based assessments that maximized validity and minimized adverse

impact. Oversaw writing of validity reports. Ensured all phases of job analysis, assessment development and administration complied with the Uniform Guidelines, SIOP Principles, APA Standards and all other applicable professional standards and laws. Responsible for the release of 12 positions from a long-standing Federal Consent Decree. Managed performance and development of subordinates. Assisted in training and development of division staff members and establishing and improving procedures, policies, and practices. Initiated and executed several performance improvement initiatives. Instrumental in transforming the organization into a state-of-the-art government HR agency. Managed projects outsourced to external vendors.

**UPS, Atlanta, GA**

- 10/01-05/03 *Learning and Development Contractor.* Supported executives with processes and decisions related to career development, promotion, succession planning and diversity initiatives through data collection and analysis, presentations and recommendations. Produced monthly succession planning reports and recommendations for business function SVPs. Developed guidelines for candidate review meetings and action logs for candidate development. Handled highly confidential information daily. Developed more efficient and automated processes.
- 11/98-01/99 Analyzed and presented Employee Relations Index survey results to UPS executives.

**Cahners-TRACOM Group, Highlands Ranch, CO**

- 2001 *Consultant.* Generated and screened items for social style assessment tools. Dimensions included tell assertive, ask assertive, responsiveness-controls, responsiveness-emotes, image, competence, optimism, communication, empathy, conscientiousness, interpersonal relationships, innovation, flexibility and overall endorsement.

**BellSouth, Atlanta, GA**

- 7/00-11/00 *Performance Consulting Intern.* Supported the development of competency models for several job families. Assisted with focus groups. Developed, edited and standardized competency models.

**Southern Company, Atlanta, GA**

- 12/98-2/00 *Consultant.* Proctored paper and pencil assessments, acted in role-play exercises, scored in-basket, role-play and writing exercise assessments for first-line supervisor assessment center.
- 8/99-11/99 *Consultant.* Conducted employee exit interviews.

**Irwin & Browning, Atlanta, GA**

- 1999 *Consultant.* Assisted with job analysis for the Photonic Technologies Division of Corning.

**BICC General, Watkinsville, GA (manufacturing company producing wire and cable)**

- 5/99-8/99 *Human Resources Intern.* Delivered Blood Borne Pathogens and Hazard Communication training to all employees. Initiated and developed assessment tool to evaluate the effectiveness of the training.

**LITIGATION EXPERIENCE**

- Green, et al. v. City of Houston.* In the *United States District Court for the Southern District of Texas, Houston Division*, Civil Action No. 4:17-cv-02179. Race discrimination in employment selection practices for promotion. Expert witness for plaintiffs. Wrote expert reports.
- Fiona Chen v. Steven T. Mnuchin, Secretary of the Department of Treasury.* In the *United States District Court for the Northern District of Illinois, Western Division*, Case No. 14 C 50164. Race

and national origin discrimination, harassment, hostile work environment, and retaliation. Expert witness for plaintiff. Wrote expert report.

*Carlos Bell, et al. v. Michigan Civil Service Commission et al.* In the *State of Michigan Circuit Court, Wayne County*, Case No. 17-003861-CZ. Race discrimination in employment selection practices. Expert witness for plaintiff. Wrote expert report and affidavits.

*Steven J. Yungner v. Patterson Companies, Inc. and Patterson Dental Supply, Inc.* In the *State of Minnesota First Judicial District Court*, Case No. 19HA-CV-17-86. Age discrimination in employment selection (reduction in force) practices. Expert witness for plaintiff. Wrote expert report.

*Marlon Carter, et al. v. State of Michigan Department of State Police, et al.* In the *Michigan Court of Claims*, Case No. 17-000154-MZ. Race discrimination in employment selection practices. Expert witness for plaintiff. Wrote expert report and affidavit.

*Gary Tinney, et al. v. City of New Haven, et al.* In the *United States District Court for the District of Connecticut*, Case No. 3:11-cv-1546-SRU. Race discrimination in employment selection practices for two promotion ranks. Expert witness for plaintiffs. Wrote expert report.

*David McCollum v. U.S. Department of Transportation (FAA).* In the *U.S. Equal Employment Opportunity Commission, Dallas District Office*, EEOC No. 310-2004-00322X. Age discrimination in employment selection practices. Expert witness for plaintiffs. Wrote expert reports, gave deposition, testified in court.

*Rufus Smith, et al. v. City of Jacksonville, et al.* In the *United States District Court for the Middle District of Florida, Jacksonville Division*, Case No. 3:11-cv-00345-TJC. Race discrimination in employment selection practices for 10 promotion selection procedures. Expert witness for plaintiffs. Consulted on promotion selection procedures, wrote declarations and expert reports, gave depositions, testified in court.

*W. Howe, et al. v. City of Akron.* In the *United States District Court for the Northern District of Ohio, Eastern Division*, Case No. 5:06 CV 2779. Race and age discrimination in employment selection practices for two promotion ranks. Expert witness for plaintiffs; wrote reports and declarations, gave deposition, and testified before jury. Defendant was placed under court-appointed monitor. Provided oversight of test development and validation on behalf of plaintiffs while defendant was under monitor.

*Gerald Ray Chambers v. Department of Transportation.* In the *U.S. Equal Employment Opportunity Commission, Raleigh Area Office*, EEOC No. 160-2003-08562X. Age discrimination in employment selection practices. Expert witness for plaintiff. Wrote expert report, gave deposition.

*Sergeant Gregory Anderson v. Cleveland Metroparks, et al.* In the *Cuyahoga County Court of Common Pleas*, Case No. CV-11-771052. Race discrimination in employment selection practices. Reviewed materials, provided preliminary opinion, and provided advice regarding discovery request.

*Dwight Bazile, et al. v. City of Houston.* In the *United States District Court for the Southern District of Texas, Houston Division*, C.A. No. H-08-2404. Race discrimination in employment selection practices for two promotion ranks. Expert witness for plaintiffs. Wrote expert report and declarations, gave deposition, testified in court twice. Parties reached a settlement in which the plaintiffs were promoted and the defendant was placed under consent decree. Provided oversight of test development and validation on behalf of plaintiffs while defendant was under consent decree.

*Frank Ricci, et al. v. John DeStefano, et al.* In the *Supreme Court of the United States*, No. 07-1428 Vide 08-328. Race discrimination in employment selection practices. *Amicus curiae* in support of respondents.

*United States of America v. Jefferson County, Alabama, et al.* In the *United States District Court for the Northern District of Alabama, Southern Division*, Civil Action No. CV-75-S-666-S. Race

and sex discrimination in employment selection practices. Employed by a defendant. Consent decree terminated November, 2008.

### **HONORS & AWARDS**

- 2019 *Best Paper in Graduate Management Education Award* from the Management Education & Development Division of the Academy of Management. The award is sponsored by Clarion University of Pennsylvania's Online MBA Program for the paper with the most significant contribution to graduate management education.
- Fall, 2018 Awarded sabbatical leave, Western Michigan University.
- Spring, 2018 *Institutional Equity Faculty Fellow* recipient, Western Michigan University.
- Jan-Dec, 2017 Inaugural *Institutional Equity Faculty Fellow* recipient, Western Michigan University.
- Dec 11, 2015 Invited to a special convening at the *U.S. Department of Justice. The Advancing Diversity in Law Enforcement* convening was a collaborative effort (among the White House, Department of Labor, Department of Justice, and Equal Employment Opportunity Commission) focusing on increasing diversity in law enforcement.
- July 15, 2015 Invited to a special convening at the *White House. The First Responder Diversity Convening* was a collaborative effort (among the White House, Department of Labor, Department of Justice, Equal Employment Opportunity Commission, and International Association of Fire Fighters) focusing on increasing diversity in the fire service.
- 2013 *Global Forum Best Paper Award* from the Management Education & Development Division of the Academy of Management. The award is sponsored by the University of Manchester, Manchester Business School for the paper that best creates the opportunity to address global issues of significance to management education and/or development.
- 2009 *Amicus curiae* to the *Supreme Court of the United States* in support of respondents.
- 2002 *Outstanding Teaching Assistant Award*, The University of Georgia.
- 2001 *The Donald L. Grant Award*, in recognition of the most outstanding Master of Science Thesis in the Applied Psychology Program, The University of Georgia.
- 1998-1999 *United Parcel Service Graduate Fellowship* recipient, The University of Georgia.

### **JOURNAL PUBLICATIONS (PEER REVIEWED)**

- Brink, K. E., & Zondag, M. M.** (Forthcoming). Examining job attribute preferences across three generational cohorts. *Journal of Career Development*. doi: 10.1177/0894845319837384
- Costigan, R. D. & **Brink, K. E.** (2020). Developing listening and oral expression skills: Pillars of influential oral communication. *Journal of Management Education*, 44(2), 129-164. doi: 10.1177/1052562919890895
- Brink, K. E., Palmer, T. B., & Costigan, R. D.** (2018). Business school learning goals: Alignment with evidence-based models and accreditation standards. *Journal of Management and Organization*, 24(4), 474-491. doi: 10.1017/jmo.2017.35
- \*Zondag, M. M., & **Brink, K. E.** (2017). Examining US college students' career information sources across three decades. *Education + Training*, 59 (9), 978-989. doi: 10.1108/ET-01-2017-0002
- \***Brink, K. E.** & Costigan, R. D. (2015). Oral-communication skills: Are the priorities of the workplace and AACSB-accredited business programs aligned? *Academy of Management Learning and Education*, 14(2), 205-221. doi: 10.5465/amle.2013.0044
- Brink, K. E., Zondag, M. M., & Crenshaw, J. L.** (2015). Generation is a culture construct. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 8(3), 335-340. doi: 10.1017/iop.2015.45
- \*Costigan, R. D. & **Brink, K. E.** (2015). Another perspective on MBA program alignment: An investigation of learning goals. *Academy of Management Learning and Education*, 14(2), 260-276. doi: 10.5465/amle.2013.0315



- \*Costigan, R. D. & **Brink, K. E.** (2015). On the prevalence of linear versus non-linear thinking in undergraduate business education: A lot of rhetoric, not enough evidence. *Journal of Management and Organization*, 21 (4), 535-547. doi:10.1017/jmo.2014.86
- Zondag, M. M. & **Brink, K. E.** (2015). Developing a new theory of frontline manufacturer-retailer relationships for consumer packaged goods. *Journal of Business-to-Business Marketing*, 22(4), 313-331. doi: 10.1080/1051712X.2015.1115704
- Brink, K. E.**, Palmer, T. B., & Costigan, R. D. (2014). Learning goals of AACSB-accredited undergraduate business programs: Predictors of conformity versus differentiation. *Journal of Education for Business*, 89(8), 425-432. doi: 10.1080/08832323.2014.929560
- Brink, K. E.** & Smith, C. A. (2012). A comparison of AACSB, ACBSP, and IACBE accredited U.S. business programs: An institutional resource perspective. *Business Education and Accreditation*, 4(2), 1-15.
- Brink, K. E.** & Crenshaw, J. L. (2011). The affronting of the Uniform Guidelines: From propaganda to discourse. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 4(4), 547-553. doi: 10.1111/j.1754-9434.2011.01390.x
- Lance, C. E., Kavanagh, M. J., & **Brink, K. E.** (2002). Retraining climate as a predictor of retraining success and as a moderator of the relationship between cross-job retraining time estimates and time to proficiency in the new job. *Group & Organization Management*, 27(2), 294-317. doi: 10.1177/10501102027002007
- \*Both authors contributed equally.

#### **BOOK CHAPTERS**

- Crenshaw, J. L., & **Brink, K. E.** (2013). New selection methods for a new generation. In W. I. Sauser Jr. & R. R. Sims (Eds.), *Managing human resources from the millennial generation*. Greenwich, CT: Information Age Publishing.
- Brink, K. E.** (2012). Adverse impact. In W. J. Rothwell & R. K. Prescott (Eds.), *The encyclopedia of human resource management: Short entries* (pp. 24-29). San Francisco, CA: Pfeiffer. doi: 10.1002/9781118364741.CH5

#### **OTHER INTELLECTUAL CONTRIBUTIONS**

- Quinn Trank, C. & **Brink, K. E.** (2020). Teaching and learning in doctoral programs: An introduction to the themed section. *Journal of Management Education*, 44(4), 468-472. doi: 10.1177/1052562920931910

#### **CONFERENCE PRESENTATIONS**

- Costigan, R. D. & **Brink, K. E.** (2019). *Developing Listening and Oral Expression Skills: Pillars of Influential Oral Communication*. Paper session presented at the meeting of the Academy of Management, Boston, MA.
- Costigan, R. D. & **Brink, K. E.** (2019). *Jujutsu Persuasion: Coopting With Values*. Paper session presented at the meeting of the Academy of Management, Boston, MA. Awarded the **Best Paper in Graduate Management Education Award** from the Management Education & Development Division of the Academy of Management.
- Brink, K. E.** (2018). *Developing a strategic plan for fire service staffing and diversity*. Presented at the International Association of Black Professional Fire Fighters Convention, Atlantic City, NJ.
- Brink, K. E.** (2017). *Recruiting strategies for advancing diversity in the fire service*. Presented at the International Association of Black Professional Fire Fighters Convention, Las Vegas, NV.
- Brink, K. E.**, Lossia, D., Schlesinger, D., & Kotagal K. (2017). *Preventing and addressing discriminatory selection practices in the fire service*. Presented at the International Association of Black Professional Fire Fighters Convention, Las Vegas, NV.

- Brink, K. E.,** Kotagal, K., & Lossia, D. (2017). *Advancing fire service diversity through strategic selection and legal recourse*. Presented at the International Association of Black Professional Fire Fighters Tri-Region Spring Conference, Cleveland, OH.
- Brink, K. E.,** & Morgan, M. H. (2016). *Enhancing fire service diversity: Staffing strategies and legal recourse*. Presented at the International Association of Black Professional Fire Fighters Tri-Region Spring Conference, St. Louis, MO.
- Costigan, R. D. & **Brink, K. E.** (2014). *Another perspective on the misalignment of MBA curricula requirements*. Paper session presented at the meeting of the Academy of Management, Philadelphia, PA.
- Costigan, R. D. & **Brink, K. E.** (2014). *On the Prevalence of Linear versus Non-Linear Thinking in Undergraduate Business Education: A Lot of Rhetoric, Not Enough Evidence*. Paper presented at the meeting of the Business Research Consortium of Western New York, Rochester, NY.
- Brink, K. E.** & Costigan, R. D. (2013). *Undergrad Business Program Learning Goals: Differentiation, Common Aspirations, or Cursory Cloning?* Paper session presented at the meeting of the Academy of Management, Orlando, FL. Awarded the **Global Forum Best Paper Award** from the Management Education & Development Division of the Academy of Management.
- Brink, K. E.** & Costigan, R. D. (2012). *Oral-communication skills in business education: Is it time for alignment?* Paper session presented at the meeting of the Academy of Management, Boston, MA.
- Costigan, R. D. & **Brink, K. E.** (2012). *Taking another look at Kilpatrick et al. (2008): Scrutinizing business school learning goals*. Paper session presented at the meeting of the Academy of Management, Boston, MA.
- Brink, K. E.** & Crenshaw, J. L. (2011). *Written Multiple-Choice Job Knowledge Tests: Pros, Cons, Misunderstandings, and Admonitions*. Paper presented at the meeting of the International Personnel Assessment Council, Washington, DC.
- Brink, K. E.,** Crenshaw, J. L., & Bellenger, B. L. (2010). *Insuring Content Validity in a Litigious Environment*. Tutorial presented at the meeting of the International Personnel Assessment Council, Newport Beach, CA.
- Birkelbach, D., **Brink, K. E.,** & Lance, C. E. (2009). Race bias in structured interview and assessment center ratings. In **K. E. Brink** & J. L. Crenshaw (Chairs), *Unraveling Ethnic Differences in Structured Interviews*. Symposium conducted at the meeting of the Society for Industrial and Organizational Psychology, New Orleans, LA.
- Brink, K. E.** & Crenshaw, J. L. (2009). Comparing Black-White differences on video vs. audio structured situational interviews. In **K. E. Brink** & J. L. Crenshaw (Chairs), *Unraveling Ethnic Differences in Structured Interviews*. Symposium conducted at the meeting of the Society for Industrial and Organizational Psychology, New Orleans, LA.
- Brink, K. E.** & Crenshaw, J. L. (2008). *Adverse impact: What is it? How do you calculate it?* Tutorial presented at the meeting of the International Public Management Association Assessment Council, Oakland, CA.
- Brink, K. E.,** Crenshaw, J. L., & Alber, M. (2008). Relationships between completion time, performance and faking on biodata/personality measures. In **K. E. Brink** (Chair), *The Fourth Dimension: How Response Times Impact Test Performance*. Symposium conducted at the meeting of the Society for Industrial and Organizational Psychology, San Francisco, CA.
- Brink, K. E.** & Lance, C. E. (2008). Development and validation of a newcomer socialization measure of information seeking frequency. In K. Zhang (Chair), *Feedback Seeking: New Developments*. Paper session presented at the meeting of the Academy of Management, Anaheim, CA.
- Brink, K. E.,** Lance, C. E., Bellenger, B. L., Morrison, M. A., Scharlau, E. A., Crenshaw, J. L. (2008). Discriminant validity of a “next generation” assessment center. In B. J. Hoffman (Chair),

- Reexamining Assessment Centers: Alternate Approaches*. Symposium conducted at the meeting of the Society for Industrial and Organizational Psychology, San Francisco, CA.
- Crenshaw, J. L., Bellenger, B. L., & **Brink, K. E.** (2008). *Video based testing: Advantages, limitations, and practical feasibility?* Paper presented at the meeting of the International Public Management Association Assessment Council, Oakland, CA.
- Bellenger, B. L., **Brink, K. E.**, & Crenshaw, J. L., (2007). *Public safety testing: Technology and innovation*. Presented at the Executive Council meeting of the International Association of Black Professional Fire Fighters, Birmingham, AL.
- Brink, K. E.** & Miller, L. (2005). Selection test orientation: Characteristics of attendees and the influence on sub-group differences. In **K. E. Brink** & J. L. Crenshaw (Chairs), *Selection Strategies for Maximizing Performance and Ethnic Diversity*. Symposium conducted at the meeting of the Society for Industrial and Organizational Psychology, Los Angeles, CA.
- Brink, K. E.** & Lance, C. E. (2004). *Proactive new hire socialization: Information seeking content domains and strategies*. Paper presented at the meeting of the Society for Industrial and Organizational Psychology, Chicago, IL.
- Brink, K. E.** (2002). Self-efficacy and goal change in the absence of external feedback. In J. B. Vancouver (Chair), *Goal-Perception Discrepancy Production: Current Practical and Theoretical Issues*. Symposium conducted at the meeting of the Society for Industrial and Organizational Psychology, Toronto, Canada.
- Brink, K. E.**, Landau, H. I., Popp, E. C., & Thomas, K. M. (2002). *Understanding diversity resistance: Examining ethnic identity and diverse experiences*. Paper presented at the meeting of the Southeastern Psychological Association, Orlando, FL.
- Popp, E. C., Landau, H. I., **Brink, K. E.**, & Thomas, K. M. (2002). *Shades of white identity: Self-labels, white ethnic identity, and attitudes toward others*. Paper presented at the meeting of the Southeastern Psychological Association, Orlando, FL.
- Brink, K. E.** & Thomas, K. M. (2001). *The variable effects of goal-performance discrepancies on future goal setting: A test of three moderators*. Paper presented at the meeting of the Society for Industrial and Organizational Psychology, San Diego, CA.

### **TECHNICAL REPORTS**

Co-authored more than 150 technical reports including validation reports, procedures manual chapters, and organizational effectiveness reports.

### **EDITOR & REVIEWER ACTIVITIES**

#### **Associate Editor**

*Journal of Management Education* 2020-Present

#### **Co-Associate Editor**

Themed Issue: Teaching and Learning in Doctoral Programs (2020). *Journal of Management Education*, volume 44, issue 4.

#### **Ad-Hoc Reviewer**

<i>Academy of Management Learning and Education</i>	2015-Present
<i>Education + Training</i>	2018-Present
<i>International Journal of Management Reviews</i>	2020-Present
<i>Journal of Management Education</i>	2013-Present
<i>The Institute for Business and Finance Research</i>	2012-Present

### **IN THE NEWS**

The WGVU Morning Show (2020, June 24). [Human resource management practices that can be implemented to enhance diversity and inclusion in the workplace](#). WGVU Public Media Radio Interview.



- Egan, P. (2020, June 4). [Attorney for black troopers: Whitmer's diversity goals are 'lip service' for MSP.](#)  
*Detroit Free Press.*
- Egan, P. (2018, November 20). [Lawsuit: Michigan law enforcement exam discriminates against blacks.](#)  
*Detroit Free Press.*
- Blackwell, J. (2011, March 6). Stigma of being jobless eases. *Democrat and Chronicle.*
- Stannard, E. (2009, June 28). A fire litmus test. *New Haven Register.*

**ACADEMIC COMMITTEES****Western Michigan University**

University-Wide Diversity Council	2017-2018
University-Wide Diversity Council Steering Committee	2017-2018
Committee for the Recruitment and Hiring of Diverse Faculty and Academic Administrators	2013-2015

*Haworth College of Business*

Zhang Career Center Advisory Board	2017-Present
Diversity & Inclusion Committee	2012-2018
Management Department Curriculum Committee	2014-2018
Management Personnel Committee	2016-Present

**St. John Fisher College**

Academic Standing Committee	2010-2012
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*Bittner School of Business*

Ad hoc MBA Programmatic Review Committee	2010-2012
Chair of AACSB Assessment Committee	2009-2011
Chair of ad hoc Code of Professional Standards Committee	2009-2010

**STUDENT RESEARCH COMMITTEES****Dissertation Committee Member**

Michelle Woodhouse Jackson	2013-2016
Interdisciplinary Ph.D. in Evaluation, Western Michigan University	
Title: <i>An analysis of evaluation practices of two training programs in the healthcare sector using the New World Kirkpatrick Model</i>	

**Dissertation Expert Panelist**

Hyeyeon (Holly) Cicconi-Eggleston	2013-2014
Doctor of Management, University of Maryland University College	
Title: <i>An examination of hiring in the U.S. private sector: What are the ethical considerations in hiring decisions?</i>	

**Thesis Reader**

Pia DiPaola Clark	2010
M.S. in Organizational Learning and Human Resource Development, St. John Fisher College	
Title: <i>Employee Motivation Factors: A Reexamination of Kovach's Study 10 Years Later</i>	

**Honor's Thesis (Lee Honors College)**

Kylie Rumsey	Committee Chair	2015-2016
BBA in Human Resource Management, Western Michigan University		
Title: <i>Predictors of Employee Engagement in the Workplace</i>		
Kaitlyn Riddell	Committee Chair	2014-2015
B.S. in Psychology: Behavioral Science, Western Michigan University		
Title: <i>Memories Bridal and Evening Wear Selection Process</i>		
Kristin Kinney	Committee Member	2014-2015
BBA in Human Resource Management, Western Michigan University		
Title: <i>Analysis of WMU Student Payroll</i>		

**PROFESSIONAL ASSOCIATION MEMBERSHIP & SERVICE**

Academy of Management, Member

Human Resources Division, Member

Management Education and Development Division, Member

Society for Human Resource Management, Member

WMU-Society for Excellence in Human Resources SHRM Student Chapter Advisor 2013-2018

St. John Fisher College SHRM Student Chapter Advisor 2010-2012

Society for Industrial and Organizational Psychology, Member

Program Committee, Member 2006-2014

Session Chair 2009

Session Chair 2008

Session Chair 2005

**SERVICE TO COMMUNITY****Kalamazoo Loaves & Fishes**, Kalamazoo, MI

Human Resources Committee, Member 2017-Present

**Family & Children Services, Inc.**, Kalamazoo, MIProvided *Implicit Bias Training* to management team 2018